

Cancer Prevention and Control

The 1990s saw the overall cancer death rate in the United States decline for the first time since such information has been tracked. Unfortunately, Maine did not experience the same decrease. Not all of the news is bad, however. Significant progress has been made toward reducing the impact of several major cancers and initiating several statewide initiatives to address others.

Cancer prevention, early detection, and treatment have undergone significant change since 1990 which has major implications for the future.

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Healthy Maine 2000 Goal

Reduce Cancer Morbidity and Mortality

Overview

Cancer is not just one disease. It is a group of diseases which include a process of abnormal and uncontrolled growth and spread of cells. Cancers are caused by internal (e.g., genetic and hormonal) and external (e.g., viral, social, and environmental) factors. Significant progress was made in the 1990's toward understanding the underlying causes of some cancers, including cervical cancer and breast cancer.

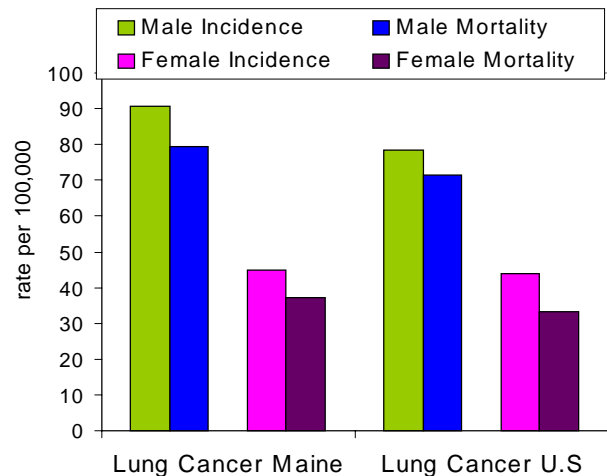
Lung Cancer Mortality among males is higher in Maine than the U.S.

Cancer causes one out of every four deaths in Maine and in the United States.^{1,2} The American Cancer Society estimates that Maine had the sixth highest total cancer death rate in the country in 1996 – 1998.³ Cancer is the second leading cause of death nationally and in Maine, causing approximately 3,000 deaths per year throughout the 1990's. Only heart disease causes more deaths in Maine. Cancer results in the loss of more years of healthy life than heart disease, because cancer deaths occur at younger ages.

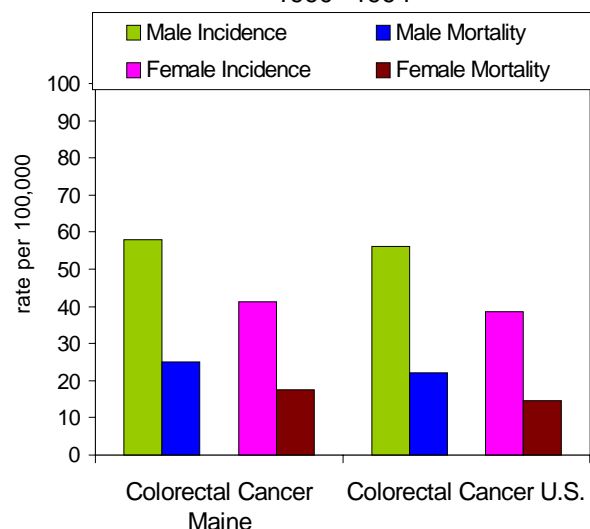
Cancer is also a costly disease. In 1997, 6,636 hospitalizations occurred in Maine as a result of cancer. Direct and indirect costs of cancer in Maine totaled nearly \$440 million in that year.⁴ Lung cancer caused the most cancer deaths in both men and women, followed by prostate cancer for men and breast cancer for women, with colorectal cancer ranking third.^{5,6}

Cancer causes one out of every four deaths in Maine and in the United States.

Lung Cancer Incidence and Mortality Rates
Maine & United States
1990 - 1994



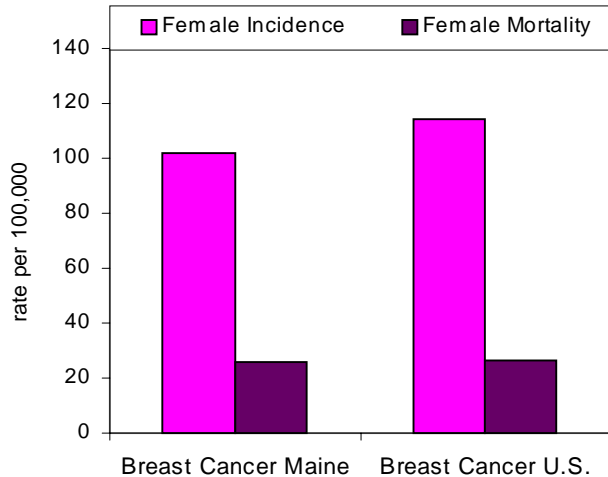
Colorectal Cancer Incidence and Mortality Rates
Maine & United States
1990 - 1994



Notes: Rates are per 100,000, age adjusted to the 1970 U.S. standard population. Data sources: Maine data are from Maine Cancer Registry Report for 1983 - 1994, Bureau of Health, Maine Department of Human Services. U.S. data are from SEER Cancer Statistics Review 1973 - 1995, Surveillance, Epidemiology and End Results Program, Division of Cancer Control and Population Sciences, National Cancer Institute. U.S. rates are for the Caucasian population only, since this provides a better comparison with Maine's population, which is approximately 98% Caucasian.

Cancer Prevention and Control

Breast Cancer Incidence and Mortality Rates
Maine & United States
1990 - 1994



Notes: Rates are per 100,000, age adjusted to the 1970 U.S. standard population. See additional source information under lung and colorectal charts.

Mortality in Maine is similar to that in the United States for each of the cancers noted except for lung cancer mortality among males, which is significantly higher in Maine. It is interesting to note that while mortality rates for female breast cancer and for prostate cancer are similar to the United States, Maine's incidence rates appear lower. Further investigation is needed to determine whether this is an issue related to stage at diagnosis (i.e., an issue of early detection), to treatment (e.g., choice of type of treatment, delay in treatment), or to under-reporting of cancer cases.

While Maine's overall goal is to reduce total cancer mortality and morbidity, only cancers that are significant public health problems and/or are readily amenable to public health interventions, such as early detection or health education to promote prevention, are highlighted here. These include breast, cervical, and colorectal cancers. Also highlighted is the modifiable risk factor of fruit and vegetable consumption. Lung cancer and tobacco use, physical activity and other aspects of nutrition are highlighted in other chapters. It is important to note that the Bureau of Health has funding for the control of breast and cervical cancer and reducing tobacco use, but not for other cancer sites.

Estimates of the Proportion of Cancer Deaths
Attributed to Various Factors

Factor	Doll and Peto Estimates %	Miller Estimates %	Harvard Estimate%
Tobacco	30	29	30
Diet	35	20	30
Infective processes	10	---	5 ^a
Occupation	4	9	5
Family History	---	8	5
Reproductive & Sexual History	7	7 ^b	3
Sedentary Lifestyle	---	---	5
Perinatal factors/growth ^c	---	---	5
Geophysical ^d	3	1	2
Alcohol ^e	3	6	3
Socioeconomic status	---	---	3
Pollution	2	---	2
Medication & Medical procedures	1	2 ^f	1
Industrial & Consumer Products	<1	---	---
Salt/other food additives/contaminants	---	---	1

^a Viruses and other biological agents

^b Attributed to parity (4%) and sexual activity (3%)

^c Excess energy intake early in life and/or larger birth weight

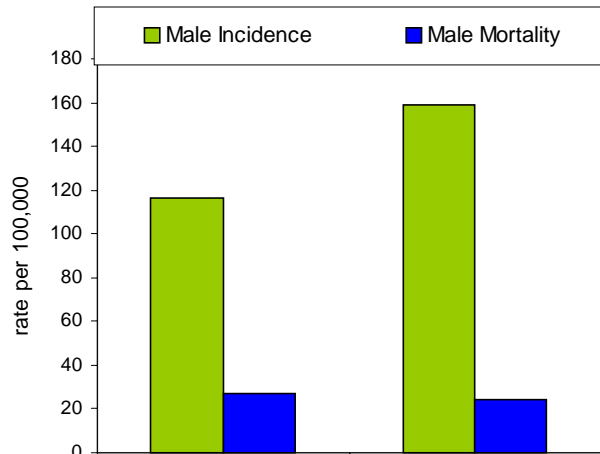
^d Mainly natural background radiation and sunlight

^e With the exception of liver cancer, most alcohol-related cancers result from the combination of alcohol consumption and cigarette smoking

^f Attributed to drugs (1%) and radiation (1%)

Source: Chronic Disease Epidemiology and Control, 2nd Ed., 1998

Prostate Cancer Incidence and Mortality Rates
Maine & United States
1990 - 1994



Notes: Rates are per 100,000, age adjusted to the 1970 U.S. standard population. See additional source information under lung and colorectal charts.

Maine's prostate cancer incidence rates are lower than the U.S. rates.

New and Emerging Issues in the 1990's

A variety of new and emerging issues at the national level influenced cancer control in Maine throughout the decade. Issues ranged from better understanding of cancer, its risk factors and precursors, to the impact of reimbursement on cancer early detection.

Links Between Cancer and Infectious Disease

The links between some cancers and infectious diseases have been known for some time, for example, the link between liver cancer and Hepatitis B Virus. In the 1990's, a strong link between cervical cancer and the Human Papillomavirus (HPV) was identified.^{7,8,9,10} This link has shifted the focus of cervical cancer prevention to include prevention of sexually transmitted diseases as well as promoting detection of pre-cancerous cervical abnormalities through Pap tests.

Nutrition is implicated as the second leading modifiable cause of cancer behind tobacco use.

Genetics

Genetic factors clearly play a role in the development of cancer. Genetic mutations may be inherited or may be caused by exposure to specific agents. There is increasing information that some people are predisposed to cancers because of inherited genetic syndromes. Small proportions of both colorectal cancer and breast cancer are related to inherited syndromes. In the early 1990's, two genes that are responsible for approximately 80% of all inherited cases of breast cancer were identified, BRCA1 and BRCA2.¹¹ These genes also confer a higher risk of ovarian cancer.

The identification of these genes raised a variety of related questions, including: the appropriateness of genetic screening for the mutation; the need for informed consent for genetic screening; the desire for protection of genetic information (particularly in the context of health insurance); and the reasonableness of bilateral prophylactic mastectomy¹² for women who carry the genes. These and similar issues will need to be monitored in the future.

Socioeconomic Status, Minorities, Special Populations, and Cancer

The understanding of the links among socioeconomic status, membership in minority or other special populations, and cancer has expanded in the 1990's.¹³ Public and private funding sources increasingly focus on "eliminating health disparities" as a major goal of public health interventions for all diseases, including cancer. We need to continue to refine our understanding of Maine's special populations, involve members of special populations in public health initiatives, and implement interventions that are appropriate.

Role of Physical Activity and Nutrition

Nutrition is implicated as the second leading modifiable cause of cancer behind only tobacco use.^{14,15} Physical activity is also important in the prevention of cancer, both as a means to control weight and as a means to prevent colorectal cancer. Increasing focus is being placed on nutrition and physical activity as means to prevent cancers.

Much research has been done in the past decade to isolate the impact of various dietary habits on cancer.¹⁶ There is agreement on a limited number of healthy habits that have strong relationships with reduction of one or more cancers. These include: avoiding obesity and weight gain during adulthood; being moderately to vigorously active for at least 30 minutes on most days; consuming five servings of fruits and vegetables daily; replacing red meat with chicken, fish, nuts, and legumes and consuming dairy products at most in moderation; and limiting alcohol consumption to one drink a day for women and two for men.¹⁷ Since these guidelines also have positive impact on prevention and

management of cardiovascular disease and diabetes, they should have major focus in future public health efforts in Maine.

The Impact of Insurance and Managed Care

Insurance, and specifically, managed care, has an increasing impact on the early detection of cancer. In the years 1996 – 1999, over 200 pieces of legislation were introduced in states or at the national level to mandate insurance companies to cover early detection for a variety of cancers.¹⁸ This type of legislation is generally called “mandated benefits.” In Maine, mandated benefits were enacted in the 1990’s for both screening mammography and prostate cancer screening^a. The Medicare program^b was substantially expanded in 1998. New coverage included annual benefits for screening mammograms instead of every other year; coverage of Pap tests, pelvic exams and clinical breast exams every three years; and coverage of colorectal cancer screening.

Occupation and Environment

The public is increasingly concerned with the links between occupation and environment, and cancer. Occupational and environmental exposures are considered together because they both reflect factors that are external to the person. These external factors may be able to be controlled by individuals (e.g., exposure to sunlight), or not (e.g., air pollution). External factors interact with one another and with individual genetic predisposition toward certain types of cancer.¹⁹ Among the strong environmental–cancer links are the following: secondhand smoke to lung cancer, and ultraviolet radiation from sunlight to skin melanoma. Among the clearest occupational–cancer links are those that have been shown with asbestos to lung cancer, and exposure to aromatic amines in the textile, rubber, and leather industries to bladder cancer.²⁰ Continuing research in this area will

increase understanding of which environmental and occupational exposures should be targeted for modification.

In the meantime, public health efforts should focus on reducing exposure to secondhand smoke (see tobacco control chapter), reducing exposure to sunlight, and preventing workplace and environmental exposures to carcinogens.

Chemoprevention

Chemoprevention refers to the use of drugs or other agents to suppress or prevent the development of cancer.

Chemoprevention research does not include foods of a normal diet, but does study high doses of some compounds one would consume, such as vitamin A and beta-carotene. Research in chemoprevention has expanded greatly in the 1990’s to include a number of large clinical studies. Of particular public health interest are the studies related to cancers for which effective early detection exists: breast, colorectal, and skin cancer.²¹

The Breast Cancer Prevention Trial was launched in 1992 to study the impact of prophylactic Tamoxifen on breast cancer incidence among high-risk women. Study results released in April 1998 showed a significant decrease in breast cancer incidence, but also showed an increase of negative side effects such as endometrial cancer and blood clots in the lungs and major veins. We will have to closely monitor the ongoing results of chemoprevention studies to assess their applicability in the public health arena.

*Prevention and early detection
continue to be the mainstay of
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^a The Maine Bureau of Health did not support the mandated benefit for prostate cancer screening, since the benefits of such screening is not yet scientifically supported.

^b Medicare is the federal program which pays for health insurance for individuals who are age 65 and older or disabled.

Weighing Risks Versus Benefits of Cancer Prevention Initiatives

Medicine is practiced using the tenet, “first do no harm.” Public health likewise seeks to improve the lives of populations without harming individuals in those populations. In the 1990’s, several instances of potential harm caused by medical and public health interventions were identified. Breast cancer provides several examples. Many postmenopausal women use estrogen replacement therapy (ERT) to prevent heart disease and osteoporosis. However, ERT has now been found to not only make mammography less effective by increasing the density of breast tissue (and thus reducing the image quality of mammography), but may also be linked to actual increased risk for breast cancer and may not prevent heart disease.^{22,23}

Another example is the false positive results from clinical breast exams and mammograms. Although they confer great benefits, neither of these screening modalities is perfect: both generate false negatives and false positives. False negative results may lead to delayed diagnosis of cancer. False positive results lead to unnecessary biopsies and anxiety.^{24,25} Research in the 1990s brought concerns about the impact of false positive screening tests to the fore. As a result, increased emphasis has been placed on accuracy and specificity of screening tests, as well as on fully educating patients about the benefits and potential shortcomings of screening.

Continuing Progress

Early Detection: The Ongoing Promise

Prevention and early detection continue to be the mainstay of the public health approach to cancer control. Just as the 1990’s saw significant progress in the understanding of and advancement of prevention of cancer, there was also progress in early detection. This progress did not occur without controversy. Early detection is dependent upon adherence to specific guidelines for the frequency of

screening by both health care providers and individuals. Screening for colorectal cancer, prostate cancer, and skin cancer were all debated in the 1990s. As scientific study of the impact of early detection continues, an ongoing challenge will be balancing screening against the effectiveness of the treatment available for the cancer detected. For example, the prostate-specific antigen (PSA) blood test for prostate cancer is currently an equivocal screening test because it is unclear whether earlier detection and treatment actually reduces illness and prolongs life.²⁶

Of particular concern was the frequency of mammography screening for women age 40 - 49. Breast cancer screening guidelines were the topic of hot dispute among the scientific community throughout the decade. Finally, in 1997, the National Cancer Institute, after lengthy scientific and political wrangling, agreed to recommend mammography screening every one to two years for all women age 40 and older. The American Cancer Society simultaneously altered its mammography screening guidelines from every other year for women age 40 - 49 and annually for women 50 and older to a blanket recommendation for annual screening for women 40 and older.

The good news is that, in spite of controversy and confusion related to the recommendations of health care providers, the public is more aware of and more likely to follow clinical guidelines for screening. Maine must continue to inform the health care community and Maine citizens about the benefits and limitations of early detection, and to develop programs and policies to increase access to these services.

Early Detection: Quality Improvement and New Methods

A number of policy developments in the 1990s have improved the quality of early detection methods. The Mammography Quality Standards Act (MQSA) was passed in 1993 and reauthorized in 1998. The goal of the act is to improve the quality of mammograms and assure systematic reporting of results. Among the aspects of mammog-

raphy MQSA addresses are: inspection of mammography facilities, training of personnel, equipment requirements, record-keeping, reporting, informing patients, and release of mammographic films to patients.

MQSA requires use of a standard reporting language for mammograms. The American College of Radiology's Breast Imaging Reporting and Data System (BI-RADS) is now the standard across the country. This system reports results in the categories shown below.

- I. Negative
- II. Benign Finding
- III. Probably Benign - Short-Term Follow-Up
- IV. Suspicious Abnormality
- V. Highly Suggestive of Malignancy

Standardization of results has been of great benefit both to patients and providers in determining appropriate diagnostic and treatment procedures.

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Standardization of reporting of screening tests was addressed both by MQSA and by a new system of reporting Pap Test results called The Bethesda System (TBS). TBS was developed through multidisciplinary workgroups convened by the National Cancer Institute to address the "diagnostic chaos" that existed in cervical cytology reporting until the late 1980s. TBS reports Pap results in three sections: adequacy of the specimen, a general categorization of the result, and a specific descriptive diagnosis. One of the most important aspects of TBS is that it distinguishes between infections that would not lead to cancer, and other results.

New methods of screening for common cancers are being developed. Several new Pap Test techniques serve as examples of these advances in technology. Thinprep is a technique by which the cervical cells are immediately placed in a liquid for transportation to the cytology laboratory rather than being placed on a microscope slide at the doctor's office. Two computer-assisted automated Pap Test methods have also been developed, Papnet and Autopap. Both read microscope slides automatically with a computer. While some of these new technologies are interesting, at this time the costs for some outweighs additional benefit, and there may be more false positive screening results, and thus more unnecessary diagnostic procedures.²⁷

The Food and Drug Administration recently approved a digital mammography system that may allow radiologists to better screen women with dense breast tissue. There is controversy about the new imaging technique. Some reviewers feel that the digital images are not of higher quality, while others have found that the images are more specific.²⁸

Recent research on the utility of Human Papilloma Virus (HPV) testing as a means to help plan treatment for pre-cancerous cervical abnormalities indicates that such testing does not significantly add to clinical knowledge.²⁹ Such a high percentage of women with pre-cancerous abnormalities have evidence of HPV infection that identification of the abnormality through Pap testing still is the most effective and efficient

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method. HPV testing is more expensive than the Pap test, so it is unlikely to become a widely used screening method in the near future. Digital mammography, new Pap technologies, HPV testing, and all new technologies for cancer screening must be monitored in the future to assure they are appropriately incorporated into public health efforts.

Identification of Individuals at Risk

Risk assessment is important in early detection. Many screening guidelines provide different recommendations for those at higher risk. There has been increased attention to quantifying cancer risk in the 1990s. One example is the Breast Cancer Risk Assessment Tool developed by the National Cancer Institute. The tool predicts the absolute risk of developing breast cancer over the next five years by considering the following factors: age at first live birth (or having no children), history of breast biopsies, number of close relatives with breast cancer.

Improvements in Treatment

Treatment for many cancers has improved over the past ten years. New chemotherapy drugs, better surgical techniques, improved radiation therapy, biological therapy, and increasing use of multimodality therapy have combined to increase survival rates.³⁰ The combination of improved early detection with improved treatment in the 1990s has vastly changed the outlook for Maine citizens who are diagnosed with cancer.

Breast and Cervical Cancers

The Maine Breast and Cervical Health Program in the Bureau of Health is funded by the Centers for Disease Control and Prevention (CDC) through the National Breast and Cervical Cancer Early Detection Program, and is administered in cooperation with Medical Care Development. The program is a breast and cervical cancer early detection and control program, which includes: payment for screening and diagnostic tests for low-income women who are un- or under-insured; public education to inform all Maine women of the importance of early detection; professional education

to assure that screening tests are performed in a timely manner and are of the highest quality; surveillance; and program evaluation. The program has contracts with over 200 primary care providers, diagnostic/referral providers, laboratories, and mammography facilities. By the end of 1999, the program had served over 5,200 women. Thirty-eight breast cancers and 18 cervical cancers were detected among low-income older women who might not otherwise have received screening services.

Professional education has been made available to primary care providers, cytotechnologists, and radiologic technologists. Primary care providers have had the opportunity to increase their skills in colposcopy and clinical breast exam through hands-on clinical training. They also have had the opportunity for didactic sessions in a wide range of breast and cervical early detection issues. An audiotape on effective physician-patient communication was also developed and disseminated. Special workshops for cytotechnologists and radiologic technologists on current topics in their fields have been delivered on a regular basis in cooperation with their professional societies.

Maine Cancer Registry Audits of Staging Reports

Year and Stage Type	Hospitals	% of Cases with Staging Reported
93-94 Summary	All	30%
93-94 AJCC*	All	39%
95 AJCC	COC**	92%

*AJCC is the American Joint Commission on Cancer. Cancer Staging system includes more categories than the summary staging system.

**COC stand for the Commission on Cancer, which certifies certain hospitals' cancer programs.

Note: Determining stage of cancer at diagnosis is important since this information can indicate if cancer is diagnosed in Maine in early or late stages. Work has been done to increase the reporting of stages and accuracy of this reporting.

Skin Cancer

The Bureau of Health, in partnership with the American Cancer Society (ACS) has promoted a skin cancer prevention campaign developed by CDC, "Choose Your Cover." The campaign consists of television and radio public service announcements and print ads that urge young people to avoid exposure to sunlight. The campaign ran in 1998 and 1999.

Colorectal Cancer

Colorectal cancer awareness has also been promoted through joint Bureau of Health/ACS dissemination of a CDC campaign. "Screen for Life" promotes colorectal cancer screening for adults age 50 and older. Letters were sent in 1999 to all gastroenterologists and internal medicine and family practice physicians in the state to inform them of the campaign, urge them to screen patients according to guidelines, and inform them of relevant materials available from ACS.

Improved Cancer Surveillance

Consistent and accurate data on the the incidence of cancer is critical to ongoing assessment of the scope of these diseases in Maine, as well as evaluating interventions. Since 1983 the Bureau of Health's Cancer Registry has been collecting cancer data from health care providers.

The registry has focused the last 5 years on improving the accuracy of the data by developing new case-finding systems for laboratories, provider offices, and death certificates. In addition, stage of cancer at diagnosis was added as a reporting requirement in 1995. This is important information since it indicates whether cancers in Maine are being diagnosed in early or late stages of development. Work is continuing to improve the accuracy of this reported data.

The Future

Comprehensive Cancer Control

Maine initiated a comprehensive cancer control planning effort in 1998. CDC defines comprehensive cancer control as "an integrated and coordinated approach to reduce the incidence, morbidity and mortality of cancer through prevention, early detection, treatment, rehabilitation and palliation." Prior cancer planning efforts in Maine had focused on primary prevention and early detection. Meetings of a broad-based group of interested partners from throughout the state began in April 1999 to identify steps to be taken in Maine to address cancer control in a comprehensive manner. A Coordinating Committee and five workgroups (Primary Prevention, Early Detection, Treatment, Rehabilitation/Survivorship, and Palliation) are developing goals, objectives and strategies for a cancer plan to be completed by early 2001. We look forward to implementing a comprehensive approach to cancer prevention and treatment with our many statewide partners.

Healthy Maine 2000 Objectives

Objectives established to reduce cancer morbidity and mortality.

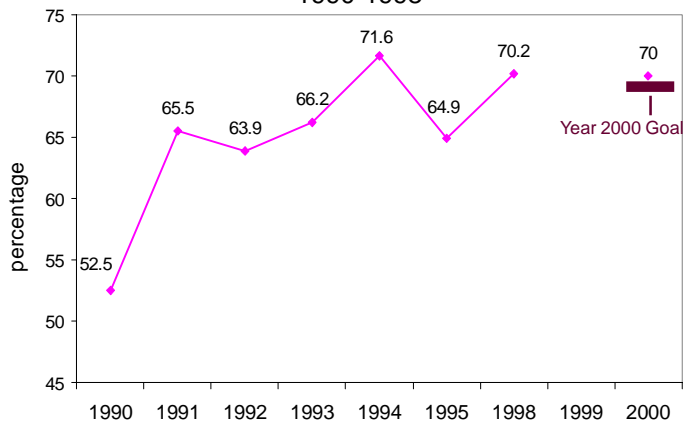
Service and Protection Objective

Increase to at least 70% the proportion of Maine women aged 40 – 49 who have received both a mammogram and clinical breast exam within the preceding two years.

Maine 1990 Baseline: 52.5%
Most Recent Data: 1998, 70.2%.

In both 1994 and 1998 the Healthy Maine 2000 objective was reached, and the overall trend in the decade showed increased screening among this age group of women. As was discussed earlier, the recommended frequency of screening for women in this age group has been a matter of great controversy in the 1990s. Such controversy leads to confusion among the public and may result in avoidance of screening services. Anecdotal evidence from the Maine Breast and Cervical Health Program (MBCHP) indicates that younger women tend to be more aggressive in seeking breast screening services. Unfortunately, the CDC funds that support the MBCHP greatly limit the number of women below the age of 50 who can be served. Significant progress can still be made toward increasing screening in this age group.

Percent of Maine Women Aged 40-49 Receiving both a Mammogram and a Clinical Breast Exam within the Preceding 2 Years 1990-1998



*Note: This question was not asked of survey participants in 1996 & 1997.

Source: Maine Department of Human Services, Bureau of Health, Behavior Risk Factor Surveillance System

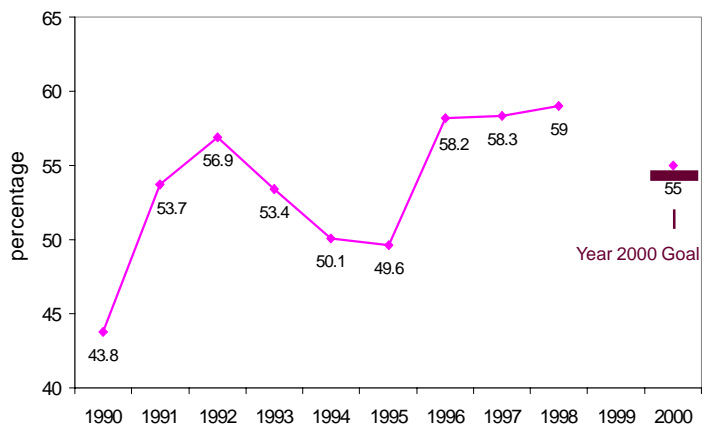
Service and Protection Objective

Increase to at least 55% the proportion of Maine women aged 50 and over who have received both a mammogram and clinical breast exam in the preceding year.

Maine 1990 Baseline: 43.8%
Most Recent Data: 1998, 59%.

The Healthy Maine 2000 goal was met in 1992 and 1996. Since 1996, the goal has been exceeded consistently. A number of factors have supported achievement of this objective. In the time period from September 1995 – December 1999, the Maine Breast and Cervical Health Program provided nearly 6,500 mammograms to almost 5,300 uninsured and underinsured Maine women. Eighty percent of these women were over the age of 50. The combination of these services and expanded public awareness of screening guidelines for women age 50 and older may have helped to increase screening rates.

Percent of Maine Women Aged 50 & Over Who Have Received both a Mammogram and a Clinical Breast Exam in the Preceding Year 1990-1998



Source: Maine Department of Human Services, Bureau of Health, Behavior Risk Factor Surveillance System

Healthy Maine 2000 Objectives

Objectives established to reduce cancer morbidity and mortality.

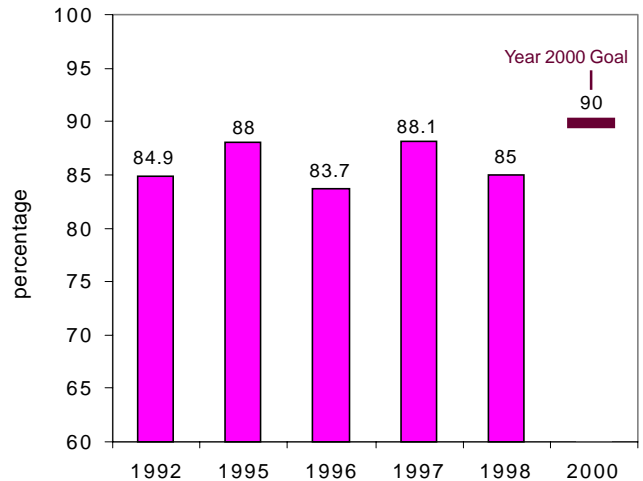
Service and Protection Objective

Increase to at least 90% the proportion of women aged 18 and older with a uterine cervix who received a Pap smear within the preceding 1 – 3 years.

Maine 1992 Baseline: 84.9%
Most Recent Data: 1998, 85%

While this goal was not achieved, the baseline was high at the beginning of the decade, which left the task of trying to address the hardest to reach women. Additional work is clearly needed to identify the 12 – 15% of the Maine women that are not receiving regular Pap smears, better understand who they are and where they live, and then develop appropriate interventions to increase the rate of screening.

Percent of Maine Women Aged 18 & Older with a Uterine Cervix Receiving a Pap Smear in Preceding 1-3 years
1992-1998



*Note: This question was not asked in 1990, 1991, 1993 & 1994

Source: Maine Department of Human Services, Bureau of Health, Behavior Risk Factor Surveillance System

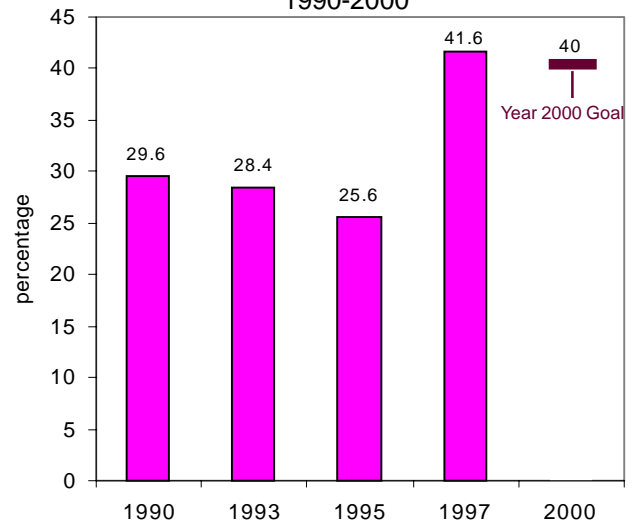
Service and Protection Objective

Increase to at least 40% the proportion of adults who have ever received a proctoscopy.

Maine 1990 Baseline: 29.6%
Most Recent Data: 1997, 41.6%

More Maine people have had at least one screening for colon cancer, as is shown by the data. The challenge for the future will be to increase both the number of Maine adults who have ever had colorectal cancer screening, and the number who have such screening tests on a regular basis.

Percent of Maine Adults Aged 50 & Over Who Have Ever Received a Proctoscopy
1990-2000



*Note: This question was not asked in 1991, 1992, 1994 & 1996

Source: Maine Department of Human Services, Bureau of Health, Behavior Risk Factor Surveillance System

Healthy Maine 2000 Objectives

Objectives established to reduce cancer morbidity and mortality.

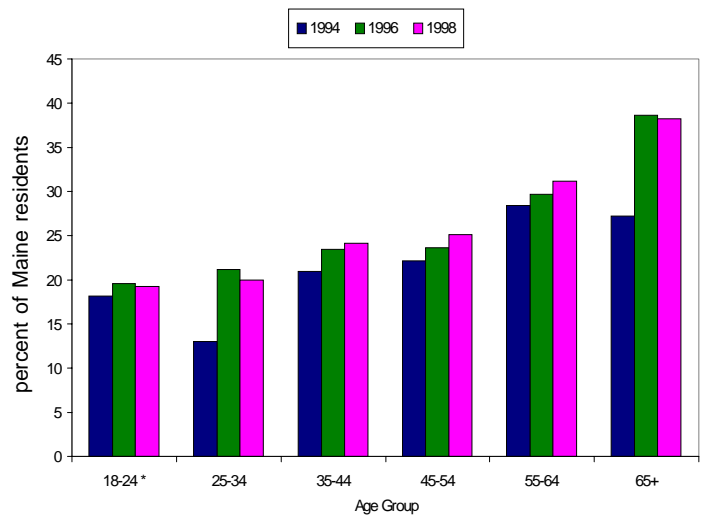
Risk Reduction Objective

Increase complex carbohydrates and fiber-containing foods in the diets of adults to five or more daily servings for vegetables (including legumes) and fruits and to six or more daily servings for grain products.

Maine 1994 Baseline: 21.1%
Most Recent Data: 1998, 26.4%

BRFSS data for the years 1994, 1996 and 1998 are presented to show that only a small portion of the Maine population eat five or more servings of fruits and vegetables each day. Women are far more likely than men to eat the recommended number of servings of fruits and vegetables, and young people of both sexes are less likely to follow the recommendation. Consumption of fruits and vegetable is associated with reduced risk of several cancers, including lung and colorectal.³¹

Fruit & Vegetable Index: Percent of Maine Residents Who Eat Five or More Servings Per Day 1994-1998



Source: Maine Department of Human Services, Bureau of Health, Behavior Risk Factor Surveillance System

*Based on fewer than 50 people in the age group who said they ate five per day.

Note: This objective was crafted based on a nutrition and physical activity survey done in 1995 which was not repeated. BRFSS questions related to consumption of five servings of fruits and vegetables each day have been asked every other year since 1994. Therefore, the BRFSS data showing the percentage of Maine individuals who eat five or more servings of fruits and vegetables per day are presented.

References

- ¹ Maine Department of Human Services, Bureau of Health, Office of Data, Research and Vital Statistics. Fast Facts: Maine Health Data, 1999.
- ² American Cancer Society. Cancer Facts and Figures 2000. Atlanta, 2000.
- ³ American Cancer Society. Cancer Facts and Figures 1998. Atlanta, 1998.
- ⁴ National Institutes of Health, Disease-specific estimates of direct and indirect costs of illness and NIH support, 1997 update. Unpublished report to Congress, 1997. Maine-specific calculations by Bureau of Health staff, May, 1999.
- ⁵ American Cancer Society. Cancer Facts and Figures 2000. Atlanta, 2000.
- ⁶ Maine Department of Human Services, Bureau of Health, Office of Data, Research and Vital Statistics, Fact Sheet-Cancer Deaths, 1997.
- ⁷ Daly, M. B, Bookman, M.A., and Lerman, C.E. Female Reproductive Tract: Cervix, Endometrium, Ovary. In Greenwald, P., Kramer, B. S., and Weed, D. L. Eds. Cancer Prevention and Control. New York: Marcel Dekker, Inc., 1995.
- ⁸ Munoz, N. and Bosch, F.X. Cervical cancer and human papillomavirus: Epidemiological evidence and perspectives for prevention. Salud Publica de Mexico 1997; 39 (4): 274-282.
- ⁹ Wallin, K-L., Wiklund, F., Angstrom, T., Bergman, F., et al. Type-specific persistence of human papillomavirus DNA before the development of invasive cervical cancer. JAMA 1999; 341 (22): 1633-1638.
- ¹⁰ Franco, E.L., Rohan, T.E., Villa, L.L. Epidemiologic evidence and human papillomavirus infection as a necessary cause of cervical cancer. J Natl Cancer Inst 1999, 91 (6): 506-511.
- ¹¹ American College of Obstetricians and Gynecologists. ACOG Committee Opinion: Breast-Ovarian Cancer Screening, 1996.
- ¹² Hartman, L.C., Schaid, D.J., Woods, J.E., et al. Efficacy of bilateral prophylactic mastectomy in women with a family history of breast cancer. New England Journal of Medicine 1999, 340 (2): 77-84
- ¹³ Alexander, G.A. Cancer control in special populations: African-Americans, Native Americans, Hispanics, Poor and Underserved. In Greenwald, P., Kramer, B.S., and Weed, D.L., Eds. Cancer Prevention and Control. New York: Marcel Dekker, Inc., 1995.
- ¹⁴ Brownson, R.C., Reif, J.S., Alavanja, M.C.R., Bal, D.G. Cancer. In Brownson, R.C., Remington, P.L., Davis, J.R., Eds. Chronic Disease Epidemiology and Control, Second Edition. Washington, D.C., American Public Health Association, 1998.
- ¹⁵ Greenwald, P., Clifford, C. Dietary Prevention. In Greenwald, P., Kramer, B. S., and Weed, D. L., Eds. Cancer Prevention and Control. New York: Marcel Dekker, Inc., 1995.
- ¹⁶ Clifford, C., Ballard-Barbash, R., Lanza, E., Block, G. Diet and Cancer Risk. In Harras, A. Ed. Cancer Rates and Risks, Fourth Edition. U.S.D.H.H.S., National Cancer Institute, 1996.
- ¹⁷ Willett, W. C. Goals for nutrition in the year 2000. CA-A Cancer Journal for Clinicians 1999, 49 (6): 331-352.
- ¹⁸ Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Cancer Prevention and Control. Cancer Legislative Information, www.cdc.gov/cancer/legislation.
- ¹⁹ Harris, E.L., Interactions Between Nature and Nurture. In Greenwald, P., Kramer, B.S., and Weed, D.L., Eds. Cancer Prevention and Control. New York: Marcel Dekker, Inc., 1995.
- ²⁰ Brownson, R.C., Reif, J.S., Alavanja, M. C. R., Bal, D. G. Cancer. In Brownson, R. C., Remington, P. L., Davis, J. R., Eds. Chronic Disease Epidemiology and Control, Second Edition. Washington, D.C., American Public Health Association, 1998.
- ²¹ Lippman, S.M., Hong, W.K., and Benner, S.E. The Chemoprevention of Cancer. In Greenwald, P., Kramer, B. S., and Weed, D. L., Eds. Cancer Prevention and Control. New York: Marcel Dekker, Inc., 1995.
- ²² Laya, M.B., Larson, E.B., Taplin, S.H., White, E. Effect of estrogen replacement therapy on the specificity and sensitivity of screening mammography. Journal of the National Cancer Institute 1996, 88 (10), 643-649.
- ²³ Creasman, W.T. Is there an association between hormone replacement therapy and breast cancer? Journal of Women's Health 1998, 7 (10): 1231-1246.
- ²⁴ Cockburn, J., Staples, M., Hurley, S.F., DeLuise, T. Psychological consequences of screening mammography. Journal of Medical Screening, 1994, 1: 7-12.
- ²⁵ Elmore, J.G., Barton, M.B., Moceri, V.M., Polk, S., Arena, P.J., Fletcher, S.W. Ten-year false positive screening mammograms and clinical breast exams. New England Journal of Medicine 1998, 338 (16): 1089-96.
- ²⁶ American Cancer Society. Cancer Facts and Figures 2000. Atlanta, 2000.
- ²⁷ American College of Obstetricians and Gynecologists. ACOG Committee Opinion: New Pap Test Screening Techniques, 1998.
- ²⁸ White, J. FDA approves system for digital mammography. Journal of the National Cancer Institute, 92 (6): 442.
- ²⁹ Atypical Squamous Cells of Undetermined Significance/Low-Grade Squamous Intraepithelial Lesions Triage Study (ALTS) Group. Human papillomavirus testing for triage of women with cytologic evidence of low-grade squamous intraepithelial lesions: Baseline data from a randomized trial. Journal of the National Cancer Institute, 92 (5): 397-402.
- ³⁰ Rosenthal, D.S. Cancer therapy-The 21st century. CA-A Cancer Journal for Clinicians 1996, 46 (3): 131-133.
- ³¹ Bal, D.G., Woolam, G.L., Seffrin, J.R. Dietary change and cancer prevention: What don't we know and when didn't we know it? CA-A Cancer Journal for Clinicians 1999, 49 (6): 323-330.